

BSPR:

A circuit assembly is frequency used in many electrical apparatus or devices of almost all aspects, typical application examples of which may include display devices inclusive of a liquid crystal device, a plasma device, DMD, and a electrochromic device; image sensors, inclusive of a thin-film type sensor comprising amorphous silicon, and a multi-tip-type sensor provided with an arranged plurality of IC chips; recording heads, inclusive of a thermal head and an ink jet head; and light-emitting device arrays, inclusive of an **LED** array, and an electron discharge device array.

BSPR:

As shown in FIG. 3, the camera 10 is disposed on a backside of the liquid crystal panel P (opposite side of the liquid crystal-drive TAB film 7), so that the substrate-side mark is observed through the glass substrate 3 and the TAB-side mark is observed through the glass substrate 3 and transparent films (transparent conductor films and the **anisotropic** conductive adhesive, etc.) formed on the substrate.

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(54) CIRCUIT ASSEMBLY AND PROCESS FOR PRODUCTION THEREOF

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(53) Field of Search 359/42, 349, 307, 132

(56) References Cited**U.S. PATENT DOCUMENTS**

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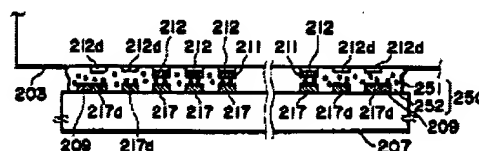
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(57) ABSTRACT

A circuit assembly suitable for constituting, e.g., a liquid crystal display device, is constructed by a transparent first substrate having thereon a plurality of first electrodes and a second substrate having thereon a plurality of second electrodes and at least partially superposed with the first substrate so that the mutually corresponding first and second electrodes are superposed and electrically connected with each other. The first electrode has a light-transmissive layer and an opaque layer laminated with the light-transmissive layer, and a portion of the first electrode superposed with the second substrate at least partially includes a light-transmissive portion. The first or second substrate has an alignment mark at a position thereof corresponding to the light-transmissive portion of the first electrode. The first substrate may for example be combined with another first substrate so as to sandwich a liquid crystal therebetween to form a liquid crystal device. The second substrate may carry a semiconductor IC chip for supplying drive signals to the liquid crystal device.

48 Claims, 12 Drawing Sheets



L Number	Hits	Search Text	DB	Time stamp
1	428	foil with plastic with glass with metal	USPAT; US-PGPUB	2002/07/12 16:24
2	341731	semiconductor or "integrated circuit"	USPAT; US-PGPUB	2002/07/12 16:19
3	100	(foil with plastic with glass with metal) and (semiconductor or "integrated circuit")	USPAT; US-PGPUB	2002/07/12 16:20
4	95	(foil with plastic with glass with metal) with substrate	USPAT; US-PGPUB	2002/07/12 16:22
5	53	(semiconductor or "integrated circuit") and ((foil with plastic with glass with metal) with substrate)	USPAT; US-PGPUB	2002/07/12 16:39
6	26	foil with plastic with glass with metal with rigid	USPAT; US-PGPUB	2002/07/12 16:24
7	11	((foil with plastic with glass with metal) with substrate) and (foil with plastic with glass with metal with rigid)	USPAT; US-PGPUB	2002/07/12 16:25
8	281	"anisotropic conductor" or "anisotropic adhesive"	USPAT; US-PGPUB	2002/07/12 16:26
9	0	(semiconductor or "integrated circuit") and ((foil with plastic with glass with metal) with substrate) and ("anisotropic conductor" or "anisotropic adhesive")	USPAT; US-PGPUB	2002/07/12 16:26
10	11	((foil with plastic with glass with metal) with substrate) and LED	USPAT; US-PGPUB	2002/07/12 16:30
11	5590	led with transistor	USPAT; US-PGPUB	2002/07/12 16:39
12	2	("anisotropic conductor" or "anisotropic adhesive") and (led with transistor)	USPAT; US-PGPUB	2002/07/12 16:40
13	26	"light emitting diode"	USPAT; US-PGPUB	2002/07/12 16:41
14	2	"light emitting diode" with transistor	USPAT; US-PGPUB	2002/07/12 16:41
15	13	(led or "light emitting diode") and transistor and ("anisotropic conductor" or "anisotropic adhesive")	USPAT; US-PGPUB	2002/07/12 16:58
-	98	(438/28).CCLS.	USPAT; US-PGPUB	2002/07/12 16:18
-	55231	stacking	USPAT; US-PGPUB	2002/07/09 14:36
-	7969	3-dimensional or "3 dimensional"	USPAT; US-PGPUB	2002/07/09 14:36
-	587	anisotropic with conductor	USPAT; US-PGPUB	2002/07/09 14:36
-	98	(438/28).CCLS.	USPAT; US-PGPUB	2002/07/09 14:36
-	55231	stacking	USPAT; US-PGPUB	2002/07/09 14:36
-	7969	3-dimensional or "3 dimensional"	USPAT; US-PGPUB	2002/07/09 15:02
-	587	anisotropic with conductor	USPAT; US-PGPUB	2002/07/09 14:40
-	0	((438/28).CCLS.) and (anisotropic with conductor)	USPAT; US-PGPUB	2002/07/09 14:41
-	0	((438/28).CCLS.) and (3-dimensional or "3 dimensional")	USPAT; US-PGPUB	2002/07/09 14:41
-	13	((438/28).CCLS.) and stacking	USPAT; US-PGPUB	2002/07/09 14:41
-	71399	3-dimensional or "3 dimensional" or 3D	USPAT; US-PGPUB	2002/07/09 15:04
-	516	438/107.ccls.	USPAT; US-PGPUB	2002/07/09 15:08
-	5	(anisotropic with conductor) and 438/107.ccls.	USPAT; US-PGPUB	2002/07/09 15:14
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-	0	(anisotropic with conductor) and 438/109.ccls.	USPAT; US-PGPUB	2002/07/09 15:14
-	9	(3-dimensional or "3 dimensional") and 438/109.ccls.	USPAT; US-PGPUB	2002/07/09 15:14

-	6	stacking and ((3-dimensional or "3 dimensional") and 438/109.ccls.)	USPAT;	2002/07/09
-	198	438/119.ccls.	US-PGPUB	15:30
-	3	(anisotropic with conductor) and 438/119.ccls.	USPAT;	2002/07/09
-	0	stacking and (3-dimensional or "3 dimensional") and 438/119.ccls.	US-PGPUB	15:30
-	439	438/455.ccls.	USPAT;	2002/07/09
-	1	(anisotropic with conductor) and 438/455.ccls.	US-PGPUB	15:31
-	1	stacking and (3-dimensional or "3 dimensional") and 438/455.ccls.	USPAT;	2002/07/09
-	252	438/458.ccls.	US-PGPUB	15:31
-	0	(anisotropic with conductor) and 438/458.ccls.	USPAT;	2002/07/09
-	1	stacking and (3-dimensional or "3 dimensional") and 438/458.ccls.	US-PGPUB	15:33
-	38	438/610.ccls.	USPAT;	2002/07/09
-	1	(anisotropic with conductor) and 438/610.ccls.	US-PGPUB	15:34
-	0	stacking and (3-dimensional or "3 dimensional") and ((anisotropic with conductor) and 438/610.ccls.)	USPAT;	2002/07/09
-	2	stacking and (3-dimensional or "3 dimensional") and (anisotropic with conductor)	US-PGPUB	15:34
-	41	438/for.426.ccls.	USPAT;	2002/07/09
-	554	anisotropic with conductor	US-PGPUB	15:34
-	0	438/for.426.ccls. and (anisotropic with conductor)	USPAT;	2002/07/09
-	73888	stacking or 3D or 3-dimensional	US-PGPUB	15:34
-	0	438/for.426.ccls. and (stacking or 3D or 3-dimensional)	USPAT;	2002/07/09
-	9	(anisotropic with conductor) and (stacking or 3D or 3-dimensional)	US-PGPUB	15:35
-	1501	438/for.369.ccls.	USPAT;	2002/07/09
-	0	(anisotropic with conductor) and 438/for.369.ccls.	US-PGPUB	15:35
-	5	(stacking or 3D or 3-dimensional) and 438/for.369.ccls.	USPAT;	2002/07/09
-	179315	"light emitting diodes" or LED	US-PGPUB	15:35
-	587	anisotropic with conductor	USPAT;	2002/07/09
-	38	("light emitting diodes" or LED) and (anisotropic with conductor)	US-PGPUB	15:36
			EPO; JPO;	2002/07/09
			DERWENT	15:36
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			EPO; JPO;	2002/07/09
			DERWENT	15:38
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			EPO; JPO;	2002/07/09
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